Journal of Pediatric Nursing 54 (2020) e117–e122

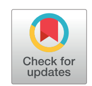
Contents lists available at ScienceDirect

Journal of Pediatric Nursing

journal homepage: www.pediatricnursing.org



An Assessment of Turkish Adults' Knowledge Levels About Their Salt and Sugar Consumption, and Their Attitudes Toward Protecting Children from Excessive Salt and Sugar Consumption



Isa Celik, MSc, RN, Doctoral student *, Murat Bektas, PhD, RN, Associate Professor

Dokuz Eylul University, Faculty of Nursing, Department of Pediatric Nursing, Izmir, Turkey

ARTICLE INFO

Article history:
Received 10 March 2020
Revised 11 April 2020
Accepted 11 April 2020

Keywords:
Salt and sugar consumption
Children
Adults
Attitudes
Protection

ABSTRACT

Purpose: The study aimed to assess adults' knowledge levels about salt and sugar consumption and their attitudes toward protecting children from excessive consumption of them.

Design and methods: A cross-sectional, methodological, descriptive, and correlational study design was conducted. The study was carried out at a family health center and included 377 participants. The results were analyzed using descriptive statistics, reliability analysis and multiple regression.

Results: The participants' knowledge scores accounted for 1.7% of their attitude scores. The participants' socio-demographic characteristics accounted for 13.9% of their knowledge scores, and the model was statistically significant ($F = 7.453$, $p < 0.001$). The participants' socio-demographic characteristics accounted for 11% of their attitude scores, and the model was statistically significant ($F = 5.672$, $p < 0.001$).

Conclusions: Children and adults should be protected from salt and sugar overconsumption, which is a risk factor for many diseases. Therefore, adults' knowledge levels about salt and sugar consumption and their attitudes toward protecting children from excessive consumption of them should be improved. It is also important to teach adults how to choose foods and beverages after checking their labels and how to be role models for children in this regard.

Practice implications: The study results will contribute to the planning of experimental studies to protect children from excessive salt and sugar consumption. In addition, the study results will provide an infrastructure for the preparation of training programs about salt and sugar consume according to the needs of different groups (older adults, young adults etc.).

Introduction

Salt has the important nutritional roles of balancing fluids and electrolytes, regulating blood pressure and helping neuromuscular systems to function properly (Erdem et al., 2010). However, overconsumption of salt is associated with an increased risk for hypertension, which in turn is especially a major risk factor for stroke and other cardiovascular diseases (CVD) (Öztürk & Garipağaoğlu, 2018; Republic of Turkey Ministry of Health [RTMH], 2016; Rust & Ekmekcioglu, 2016). Although raw foods contain low amounts of salt, salt is added to foods during processing, preservation and cooking (Sivri, 2017). Foods such as ready-to-eat sauces (ketchup, etc.), snacks (chips, popcorn, etc.), salted nuts, pickles and brine contain high amounts of salt (RTMH, 2016). In a report published in 2012, the World Health Organization (WHO) recommended adults to consume less than five grams of salt (<2 g of sodium) every day. Like many other nations, Turkey also consumes more salt than the recommended amount (Erdem et al., 2010; Öztürk & Garipağaoğlu, 2018; World Health Organization [WHO], 2012). Today, due to changes in dietary habits (increased consumption of fast and processed foods), children's daily consumption of salt is gradually increasing (Dağıstan & Gözüm, 2016; MacGregor, He, & Pombo-Rodrigues, 2015). Reducing children's consumption of salt has a positive effect on their health and reduces the incidence risk of many diseases such as CVDs in their adulthood (He, Pombo-Rodrigues, & MacGregor, 2014; Turkish Society of Cardiology, 2016; Yang et al., 2012).

Although, like salt, sugar has important roles in nutrition, excessive consumption of it can lead to diseases such as obesity and CVDs. Overconsumption of foods to which extra sugar is added during processing or consumption has negative effects on people's health (British Heart Foundation, 2019; RTMH, 2016; Sivri, 2017; Vos et al., 2017; WHO, 2015). Products such as sugar-sweetened beverages (SSBs) (carbonated drinks, fruit and fruit-flavored drinks, etc.), candies, pastries, ice cream and chocolate contain high amounts of sugar. International guidelines recommend that children of 7 to 10 years of age should consume <24 g of sugar (roughly 6 sugar cubes), a single pack of candy (100 g)

* Corresponding author.
E-mail address: isacelik9125@gmail.com (I. Celik).

https://doi.org/10.1016/j.pedn.2020.04.009
0882-5963/© 2020 Elsevier Inc. All rights reserved.

contains approximately 50 to 70 g of sugar (Libuda et al., 2009; National Health Service [NHS], 2019a; RTMH, 2016). Studies have shown that sugar intake increases general caloric intake. This leads to low consumption of healthy foods, unhealthy nutrition, obesity and increased risk of CVDs (Kell, Cardel, Bohan Brown, & Fernandez, 2014; WHO, 2015; Xi et al., 2015).

Dietary habits acquired during childhood persist into adulthood. Children are affected by adults, particularly their parents, while they acquire dietary habits. Adults' knowledge levels about and attitudes toward salt and sugar consumption affect the dietary habits of the children around them. This can protect children from unhealthy dietary habits (Nezami, Ward, Lytle, Ennett, & Tate, 2018; Pawellek et al., 2017). There are only a few studies of adults' knowledge levels about salt and sugar consumption and attitudes toward protecting children from their harmful effects. Studies usually address these subjects separately (He et al., 2014; MacGregor et al., 2015; Nezami et al., 2018; Pawellek et al., 2017).

This study aimed to approach these subjects together. It aimed to assess adults' knowledge levels about salt and sugar overconsumption, which is a global issue, and their attitudes toward protecting children from excessive consumption of them.

Design and method

Study design

A cross-sectional, methodological, descriptive, and correlational study design was conducted to assess adults' knowledge levels about salt and sugar consumption and their attitudes toward protecting children from excessive consumption of them.

Sample

GPOWER 3.1 was used to determine that a sample size of 367 was necessary for regression analysis at a 0.05 significance level, 80% power and a low effect size. Based on a potential 10% dropout rate, 404 people were included in the sample. Inclusion criteria were being over the age of 18, visited the family health center, understand questions, and agreed to participate voluntarily. The study included 377 people over 18 years of age who visited the family health center and agreed to participate voluntarily.

Compliance with ethical standards

This study conforms to the principles outlined in the Declaration of Helsinki. Ethical committee approval was obtained from the university's Non-Invasive Clinical Studies Ethics Committee to conduct this study. Permission was obtained from the family health center where the study was carried out. The participants were verbally informed about the study, and their written consent was obtained during data collection. Participation was voluntary.

Data collection tools

Data collection tools included the socio-demographic information form, the knowledge questionnaire and the attitude questionnaire. Data collection tools were developed by researchers.

The socio-demographic information form

This form includes questions about: age, gender, education level, having a cardiovascular disease, daily consumption of salty foods (fewer than 1 portion per day: very little, 1–2 portions per day: moderate, and 3 or more portions: too much), daily consumption of sugary foods (fewer than 1 portion per day: very little, 1–2 portions per day: moderate, and 3 or more portions: too much), daily consumption of SSBs (fewer than 1 time per day: very little, 1–2 times per day: moderate, and 3 or more times per day: too much), and checking the amounts of salt and sugar in their foods and beverages. To avoid confusion, descriptions of the portions, the sugary foods and beverages and salted foods included on the questionnaires are shown at the top of this form.

The knowledge questionnaire

This form was developed by researchers after analyzing the recommendations about salt and sugar consumption included in the guidelines of institutions such as RTMH, the WHO, the American Heart Association [AHA] and the NHS (AHA, 2012; NHS, 2019a; RTMH, 2016; WHO, 2015). The questionnaire has 25 questions about daily salt and sugar consumption by age group, and the amounts of salt and sugar in foods and beverages. Its multiple-choice questions have three choices. Each question has only one correct answer, and each correct answer is worth four points, making the highest possible score 100 (25 correct answers x 4 points = 100 points). Higher scores indicate higher knowledge levels about salt and sugar consumption and their amounts in foods and beverages.

The questionnaire was examined by five experts from the Nursing Division of Pediatrics Department and one dietitian. They rated each item from 1 to 4 (1 = many changes are needed (as suggested), 2 = a few changes are needed (as suggested), 3 = appropriate, 4 = very appropriate). A content validity index was used to assess the experts' opinions. It ranged from 0.91 to 1.00 for the items, and it was 0.96 for the questionnaire. Content validity indexes should be above 0.80 for both the items and the questionnaire (Şencan, 2005). The questionnaire on which the experts agreed was administered as a pilot study to a group of 30 people who had the same characteristics as the sample. There was no negative feedback concerning its clarity. Its reliability was calculated using the Kuder-Richardson Formula 20 and found to be 0.80. After consulting expert opinion and the pilot study, the final form of the questionnaire was obtained. It is described in Table 1.

After data collection, the reliability of the questionnaire was reassessed using the data from 377 participants. The Cronbach's alpha coefficient of the questionnaire was.867, and the Kuder-Richardson Formula 20 was used to determine that it had an intraclass correlation value of.837.

The attitude questionnaire

This questionnaire was developed to assess adults' attitudes toward protecting children from excessive salt and sugar consumption. This three-point Likert type scale (always, sometimes, never) consists of 11 items such as, "I inform my children about how many SSBs they can consume per day." The responses are scored: 3 points for always, 2 points for sometimes and 1 point for never. The highest possible score is 33

Table 1
The knowledge questionnaire.

Subject	Number of questions	Content
Amount of daily salt consumption	6 questions	This part consists of questions about daily salt consumption by age group.
Salt amounts of salty foods	6 questions	This part consists of questions about the amounts of salt in products such as fried potatoes, crackers and chips.
Amount of daily sugar consumption	5 questions	This part consists of questions about daily sugar consumption by age group.
Sugar amounts in sugary foods	8 questions	This part consists of questions about the amounts of sugar in products such as soft drinks, chocolate, ice cream and candy.

points (11 "always" x 3 points = 33). Higher scores indicate higher attitude levels toward protecting children from excessive salt and sugar consumption.

Expert opinions about the questionnaire were obtained from five experts from the Nursing Division of Pediatrics Department and from one dietitian. They rated each question from 1 to 4 (1 = many changes are needed (as suggested), 2 = few changes are needed (as suggested), 3 = appropriate, 4 = very appropriate). A content validity index was used to assess the experts' opinions. It ranged from 0.88 to 1.00 for the items, and it was 0.92 for the questionnaire. Content validity indexes should be above 0.80 for both the items and the questionnaire (Şencan, 2005). The questionnaire on which the experts agreed was administered as a pilot study to a group of 30 people who had the same characteristics as the sample. There was no negative feedback concerning its clarity. The Cronbach's alpha coefficient of the questionnaire was 0.85 after the pilot study. Table 2 shows the final form of the questionnaire after consulting the experts' opinions and the pilot study.

After data collection, the reliability of the questionnaire was reassessed using the data from 377 participants. The Cronbach's alpha coefficient was 0.949, and the intraclass correlation value was 0.944.

Data collection process

The researchers collected the data at a family health center from October 15, 2019 to November 15, 2019. The participants were informed about the study verbally, and their written consent was obtained. It included this sentence: "Not participating in the study or not completing it will have no effect on your health care." The data collection forms were given to the participants who met the inclusion criteria and agreed to participate voluntarily. The participants were told that if there was something they did not understand about the questions, they could ask the researchers. It took approximately 8–10 min for them to fill out the forms. Information pamphlets with the correct answers to the questions on the knowledge questionnaire were given to the participants after they filled out the forms.

Data analysis

The statistical analysis used Statistical Package for Social Sciences (SPSS 22) software. Percentages and means were used to analyze descriptive information, and the Shapiro-Wilks normality test was used to determine whether the data were normally distributed. The reliability of the knowledge questionnaire was assessed using the Kuder-Richardson Formula 20. Cronbach's alpha coefficient was calculated for reliability of the attitude questionnaire. Linear regression analysis was used to assess the extent to which the scores on the knowledge questionnaire accounted for the scores on the attitude questionnaire, and multiple regression analysis was used to assess the extent to which the socio-demographic data accounted for the scores on the knowledge and attitude questionnaires. VIF, tolerance and condition index values were used to determine whether there were multiple correlations in the study and which variables to include in regression model. The variables that had VIF values below 10, tolerance values above 0.2 and condition index values below 15 were included in the model. The threshold for statistical significance value was $p \leq 0.05$ for all the analyses.

Results

This study included 377 participants. Of them 285 (75.6%) were female. Their mean age was 31.63 ± 11.83 (min: 18, max: 84). Of them, 318 (84.4%) had graduated from universities, and 342 (90.7%) said that they did not have any CVDs. The participants' mean knowledge score was 36.33 ± 21.50 (min: 0, max: 92), and their mean attitude score was 25.15 ± 6.26 (min: 11, max: 33). Of the participants, 143 (37.9%) said their daily consumption of salty foods was very little, 219 (58.1%) said it was moderate, and 15 (4%) said they ate too much salty food. Of them, 138 (36.6%) said their daily consumption of sugary foods was very little, 213 (56.5%) said it was moderate, and 26 (6.9%) said they ate too much sugary food. When participants were asked about their daily consumption of SSB, 267 (70.9%) answered too little, 94 (24.9%) answered medium and 16 (4.2%) said they drank too many SSBs. Of the participants, 192 (50.9%) said that they do not check the amount of salt and sugar in foods and beverages, 118 (31.3%) said they do sometimes, and 67 (17.8%) said that they do.

The extent to which the knowledge questionnaire scores accounted for attitude questionnaire scores was analyzed using linear regression analysis. The model was statistically significant ($F = 6.474$, $p = 0.011$), and the knowledge scores accounted for 1.7% of the attitude scores (Table 3).

The extent to which participants' socio-demographic characteristics accounted for their knowledge scores was analyzed using multiple regression analysis. The model was statistically significant ($F = 7453$, $p < 0.001$) and gender, age, education level, having a cardiovascular disease, consumption of salty foods, consumption of sugary foods, consumption of sugary beverages, and checking the amounts of salt and sugar in foods and beverages accounted for 13.9% of the knowledge scores. Education level, checking the amounts of salt and sugar in foods and beverages and consumption of SSB significantly affected the knowledge scores (Table 4).

The extent to which the participants' socio-demographic characteristics accounted for their attitude scores was analyzed using multiple regression analysis. The model was statistically significant ($F = 5.672$, $p < 0.001$). Gender, age, education level, having cardiovascular disease, consumption of salty foods, consumption of sugary foods, consumption of sugary beverages, and checking the amounts of salt and sugar in foods and beverages accounted for 11% of the knowledge scores. Checking the amounts of salt and sugar in foods and beverages, consumption of SSBs and age significantly affected attitude scores (Table 5).

Table 2
The attitude questionnaire.

Select the appropriate responses for these statements.	Always	Sometimes	Never
I inform children about how much sugary food they should consume per day.			
I inform children about how many SSBs they should consume per day.			
I inform children about how much salty food they c should an consume per day.			
I inform children about the harmful effects of overconsumption of salty and sugary foods and beverages on cardiovascular health.			
I inform children about the amounts of sugar in sugary foods and beverages.			
I inform children about the amounts of salt in salty foods.			
I check children's daily consumption of sugary foods and beverages.			
I monitor children's daily consumption of salty food.			
If I think children consume too much sugary food, I limit their daily consumption of sugary food.			
If I think children consume too many SSBs, I limit their daily consumption of SSBs.			
If I think children consume too much salty food, I limit their daily consumption of salty food.			

Table 3
The effect of the participants' knowledge scores on their attitude scores.

Model 1		Unstandardized coefficients		Standardized coefficients	t	sig	95.0% confidence interval for B	
		B	Standard error	β			Lower bound	Upper bound
Constant		23.755	630		37.710	<0.001	22.517	24.994
Knowledge score		0.038	0.015	0.130	2.544	0.011*	0.009	0.067
R	0.130							
R^2	0.017							
F	6.474							
p	0.011							

* Dependent variable: attitude scores are significant at the level of $p < 0.05$.

Discussion

The participants' knowledge scores significantly predicted their attitude scores in this study (Table 3). This study found that education level, age, checking the amounts of salt and sugar in foods and beverages and consumption of SSBs significantly affected knowledge scores (Table 4). Checking the amounts of salt and sugar in foods and beverages, consumption of sugary foods and age significantly affected attitude scores (Table 5).

Associate and higher education levels (Bachelor etc.) correlated with higher knowledge scores (Table 4). Studies have found that high school and lower education levels are associated with low health literacy. Health literacy is the use of a wide range of skills that improve the ability of people to act on information in order to live healthier lives. Low health literacy negatively affects protection from the risk factors of diseases and the development of positive attitudes (Centers for Disease Control and Prevention, 2020; Havranek et al., 2015). High health literacy positively affects healthy dietary habits. Education levels are related to fruit and vegetable consumption, one of the most significant components of a healthy diet. Parents with associate and higher education levels feed their children healthier foods than parents with high school and lower education levels. The children of mothers with associate and higher education levels consume more sugar from fruits and fruit products instead of sugar added products than the children of mothers with high school and lower education levels. People with high school and lower education levels and the children around them are at risk for unhealthy salt and sugar consumption. They should be identified and educated about healthy salt and sugar consumption. This will protect them and the children around them from unhealthy salt and sugar consumption, which is a risk factor for many diseases, especially CVDs.

As individuals age, the number of children around them tends to increase. This study found a positive correlation between age and attitude scores, and a negative correlation between age and knowledge scores (Tables 4 and 5). Attitude levels of older adults toward protecting children against unhealthy salt and sugar consumption were found to be higher, but they knew less about salt and sugar consumption than young adults as reported by the knowledge and attitude questionnaires. In contrast, knowledge levels of young adults were higher and protective levels were lower than for older adults. The American Heart Association's "Cardiovascular Health Promotion in Children: Challenges and Opportunities for 2020 and Beyond" says: "The primary focus is on adult cardiovascular health and disease prevention, but critical to achievement of this goal is maintenance of ideal cardiovascular health from birth through childhood to young adulthood and beyond." Studies have found that most children in the US do not follow healthy diet recommendations. They consume too much salt and sugar but fail to eat enough fruits and vegetables. The contributions of parents and other adults are crucial for them to acquire healthy dietary habits because good role models positively affect children's diets (Steinberger et al., 2016). Adults should protect themselves and the children around them from the harms of excessive salt and sugar consumption. Adults should be educated about salt and sugar consumption to improve their attitudes toward protecting children. This will enable them to protect themselves and the children around them from unhealthy salt and sugar consumption, which is a risk factor for many diseases, especially CVDs (Jordan, Taylor Piotrowski, Bleakley, & Mallya, 2012).

This study found negative correlations between consumption of SSBs and knowledge scores and between consumption of sugary foods and attitude scores (Tables 4 and 5). Studies have found that the daily consumption of SSBs is high among children whose parents do not know about their sugar content (Zahid, Davey, & Reicks, 2017). Educating parents about sugar consumption and products containing sugar will improve their attitudes toward protecting their children from the overconsumption of sugar (Dallacker, Hertwig, & Mata, 2018). Educating mothers reduces the SSB consumption of both mothers and their children, and beneficial changes in the personal health of mothers positively affect their children (Nezami et al., 2018).

Studies have shown that checking ingredient labels reduces consumption of sugary foods and SSBs. Checking product contents positively affects people's product choices and improves their diets

Table 4
The effects of the participants' socio-demographic characteristics on their knowledge scores.

Model 1		Unstandardized coefficients		Standardized coefficients	t	sig	95.0% confidence interval for B	
		B	Standard error	β			Lower bound	Upper bound
Constant		22.631	11.288		2.005	0.046	0.434	44.829
Gender		−2.598	2.467	−0.052	−1.053	0.293	−7.450	2.253
Age		−0.307	0.099	−0.169	−3.106	0.002*	−0.501	−0.113
Education		7.475	1.777	0.222	4.206	<0.001*	3.980	10.970
Having cardiovascular disease		0.816	2.655	0.015	0.308	0.759	−4.404	6.037
Daily consumption of salty food		−0.303	2.112	−0.008	−0.144	0.886	−4.457	3.850
Daily consumption of sugary food		−1.463	1.974	−0.040	−0.741	0.459	−5.343	2.418
Daily consumption of sugar sweetened beverages (SBB)		−4.145	2.055	−0.107	−2.017	0.044*	−8.187	−0.104
Checking the salt and sugar content of food consumed		3.687	1.470	0.130	2.509	0.013*	0.797	6.577
R	0.373							
R^2	0.139							
F	7.453							
p	<0.001							

* Dependent variable: knowledge scores are significant at the level of $p < 0.05$.

Table 5
The effects of the participants' socio-demographic characteristics on their attitude scores.

Model 1	Unstandardized coefficients		Standardized coefficients	t	sig	95.0% confidence interval for B	
	B	Standard error	β			Lower bound	Upper bound
Constant	22.630	3.347		6.761	<0.001	16.048	29.212
Gender	−1.066	0.732	−0.073	−1.457	0.146	−2.504	0.373
Age	0.066	0.029	0.124	2.239	0.026*	0.008	0.123
Education	0.214	0.527	0.022	0.407	0.684	−0.822	1.251
Having cardiovascular disease	0.705	0.787	0.046	0.896	0.371	−0.843	2.253
Daily consumption of salty food	0.184	0.626	0.016	0.294	0.769	−1.048	1.415
Daily consumption of sugary food	−1.341	0.585	−0.126	−2.292	0.022*	−2.492	−0.191
Daily consumption of sugar sweetened beverages (SBB)	−0.456	0.609	−0.040	−0.749	0.454	−1.655	0.742
Checking the salt and sugar content of food consumed	1.647	0.436	0.200	3.779	<0.001*	0.790	2.504
R 0.331							
R^2 0.110							
F 5.672							
p <0.001							

* Dependent variable: attitude scores are significant at the level of $p < 0.05$.

(Dallacker et al., 2018; Haidar, Carey, Ranjit, Archer, & Hoelscher, 2017; Soederberg et al., 2015). Food labels help people to choose between products and control the rate at which they consume saturated fats, salt and sugar. Checking the amounts of sugar in soft drinks affects individuals' attitudes toward consuming them. Many institutions recommend using food labels to decide whether or not to consume products (Food and Agriculture Organization of the United Nations, 2019; National Institute on Aging, 2019; NHS, 2019b). This study found that the mean knowledge and attitude scores of the participants who check the amounts of salt and sugar in foods and beverages were significantly higher than those who do not (Tables 4 and 5). This result shows that the participants who check food labels have higher knowledge levels about salt and sugar consumption and higher attitude levels toward protecting children from their harm. People who check the ingredients of their foods and beverages are more capable of protecting both themselves and the children around them from unhealthy salt and sugar consumption. However, only checking food labels is not enough to choose the healthiest products. Individuals should also know the recommended amounts of salt and sugar by age group and compare them with the amounts of salt and sugar in products. Educating adults about salt and sugar consumption and checking food labels will help to protect both themselves and the children around them from unhealthy salt and sugar consumption. Adults who select healthy products after checking food labels are good role models for the children around them (Dallacker et al., 2018; Haidar et al., 2017; Jackey, Cotugna, & Orsega-Smith, 2017). While an accurate, effective and consumer-friendly labeling system facilitates choosing healthy products, inaccurate, deceptive and user-hostile labeling systems make it difficult to choose healthy products (Hawley et al., 2013). Improving the labeling system, highlighting food ingredients such as salt and sugar, making the labels legible and clear will positively affect healthy product choices.

Practice implications

The results of the research will contribute to the planning of future studies to better understand the factors that affect children's excessive salt and sugar consumption and the testing of the effectiveness of interventions designed to reduce salt and sugar reduction in children not only in Turkey but in other countries as well. In addition, the findings of this study provide insights for the preparation of training programs about salt and sugar consumption that may vary according to the needs of different groups as found in this investigation (older adults, young adults). As the findings of this study indicate, parental instruction about their children's healthy consumption of salt and sugar is warranted and should be included in health education programs provided in school and health care settings in Turkey and worldwide.

Limitations

The participants were enrolled using convenience sampling from randomly selected family health center in İzmir. The differences in demographic characteristics in other regions may affect the generalizability of the findings.

Conclusion

This study differs from the relevant literature because it discusses adults' knowledge levels about salt and sugar overconsumption and their attitudes toward protecting children from excessive consumption of them.

Knowledge levels about salt and sugar consumption affect attitudes toward protecting children against their harm. It is important to increase adults' knowledge levels to improve their attitudes toward protecting children from excessive consumption of them. The findings of this study suggest parental age as a factor to consider in designing and providing training. Therefore, training programs on protecting children from the harms of excessive salt and sugar consumption should be developed for them. The knowledge and attitude levels of the participants who consume high amounts of sugary foods and beverages were lower. Identifying people who consume too much sugar and educating them about healthy salt and sugar consumption is important for both them and the children around them. This study found that the knowledge and attitude levels of the participants who do not check the amounts of salt and sugar in their foods and beverages were lower. It is important to teach them how to choose foods and beverages after checking their labels and how to be role models for children in this regard. Children and adults should be protected from salt and sugar overconsumption, which is a risk factor for many diseases. Therefore, adults' knowledge levels about salt and sugar consumption and their attitudes toward protecting children from excessive consumption of them should be improved.

Author contribution

Both authors have contributed equally to the manuscript.

CRediT authorship contribution statement

Isa Celik: Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing. **Murat Bektas:** Conceptualization, Methodology, Formal analysis, Writing - original draft, Writing - review & editing.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of competing interest

The authors declare that they have no conflict of interest and the content has not been published or submitted for publication elsewhere.

Acknowledgements

We would like to thank all the participants and institutions contributed to this study process, as well as those who have contributed to the literature on which we established our study.

References

American Heart Association (2012). FACTS, salt, reducing sodium in the diets of American children. Retrieved from https://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_433027.pdf.

British Heart Foundation (2019). HEART MATTERS, what are free sugars? Retrieved from https://www.bhf.org.uk/informationsupport/heart-matters-magazine/nutrition/sugar-salt-and-fat/free-sugars.

Centers for Disease Control and Prevention (2020). What is health literacy? Retrieved from https://www.cdc.gov/healthliteracy/learn/index.html.

Dağıstan, A., & Gözüm, S. (2016). Determination and management of cardiovascular disease risk on primary health care centers. *TAF Preventive Medicine Bulletin*, *15*(6), 575–582.

Dallacker, M., Hertwig, R., & Mata, J. (2018). Parents' considerable underestimation of sugar and their child's risk of overweight. *International Journal of Obesity*, *42*(5), 1097–1100.

Erdem, Y., Arici, M., Altun, B., Turgan, C., Sindel, S., Erbay, B., ... Caglar, S. (2010). The relationship between hypertension and salt intake in Turkish population: SALTURK study. *Blood Pressure*, *19*(5), 313–318.

Food and Agriculture Organization of the United Nations (2019). Food Labelling. Retrieved from http://www.fao.org/food-labelling/en/.

Haidar, A., Carey, F. R., Ranjit, N., Archer, N., & Hoelscher, D. (2017). Self-reported use of nutrition labels to make food choices is associated with healthier dietary behaviours in adolescents. *Public Health Nutrition*, *20*(13), 2329–2339.

Havranek, E. P., Mujahid, M. S., Barr, D. A., Blair, I. V., Cohen, M. S., Cruz-Flores, S., ... Rosal, M. (2015). Social determinants of risk and outcomes for cardiovascular disease: A scientific statement from the American Heart Association. *Circulation*, *132*(9), 873–898.

Hawley, K. L., Roberto, C. A., Bragg, M. A., Liu, P. J., Schwartz, M. B., & Brownell, K. D. (2013). The science on front-of-package food labels. *Public Health Nutrition*, *16*(3), 430–439.

He, F. J., Pombo-Rodrigues, S., & MacGregor, G. A. (2014). Salt reduction in England from 2003 to 2011: Its relationship to blood pressure, stroke and ischaemic heart disease mortality. *BMJ Open*, *4*(4).

Jackey, B. A., Cotugna, N., & Orsega-Smith, E. (2017). Food label knowledge, usage and attitudes of older adults. *Journal of Nutrition in Gerontology and Geriatrics*, *36*(1), 31–47.

Jordan, A., Taylor Piotrowski, J., Bleakley, A., & Mallya, G. (2012). Developing media interventions to reduce household sugar-sweetened beverage consumption. *The Annals of the American Academy of Political and Social Science*, *640*(1), 118–135. https://doi.org/10.1177/0002716211425656.

Kell, K. P., Cardel, M. I., Bohan Brown, M. M., & Fernandez, J. R. (2014). Added sugars in the diet are positively associated with diastolic blood pressure and triglycerides in children. *The American Journal of Clinical Nutrition*, *100*(1), 46–52.

Libuda, L., Alexy, U., Buyken, A. E., Sichert-Hellert, W., Stehle, P., & Kersting, M. (2009). Consumption of sugar-sweetened beverages and its association with nutrient intakes and diet quality in German children and adolescents. *British Journal of Nutrition*, *101*(10), 1549–1557.

MacGregor, G. A., He, F. J., & Pombo-Rodrigues, S. (2015). Food and the responsibility deal: How the salt reduction strategy was derailed. *BMJ (Online)*, *350*(April), 1–5.

National Health Service (2019a). How does sugar in our diet affect our health? Retrieved from https://www.nhs.uk/live-well/eat-well/how-does-sugar-in-our-diet-affect-our-health/.

National Health Service (2019b). Food labels. Retrieved from https://www.nhs.uk/live-well/eat-well/how-to-read-food-labels/.

National Institute on Aging (2019). Reading food labels. Retrieved from https://www.nia.nih.gov/health/reading-food-labels.

Nezami, B. T., Ward, D. S., Lytle, L. A., Ennett, S. T., & Tate, D. F. (2018). A mHealth randomized controlled trial to reduce sugar-sweetened beverage intake in preschool-aged children. *Pediatric Obesity*, *13*(11), 668–676.

Öztürk, İ., & Garipağaoğlu, M. (2018). Salt consumption and health. *Turkiye Klinikleri Journal of Health Sciences*, *3*(1), 57–65.

Pawellek, I., Grote, V., Theurich, M., Closa-Monasterolo, R., Stolarczyk, A., Verduci, E., ... Koletzko, B. (2017). Factors associated with sugar intake and sugar sources in European children from 1 to 8 years of age. *European Journal of Clinical Nutrition*, *71*(1), 25–32.

Republic of Turkey Ministry of Health (2016). Turkey dietary guidelines. Retrieved from https://dosyasb.saglik.gov.tr/Eklenti/10922,17ocaktuberingilizcepdf.pdf?0.

Rust, P., & Ekmekcioglu, C. (2016). Impact of salt intake on the pathogenesis and treatment of hypertension. *Hypertension: From basic research to clinical practice* (pp. 61–84). Springer International Publishing.

Şencan, H. (2005). *Reliability and validity of social and behavioral scales*. Ankara: Seçkin Kitapevi.

Sivri, H. S. (2017). Nutrition. In M. Yurdakök (Ed.), *Pediatri* (pp. 1489–1557). Ankara: Güneş Tıp Kitapevleri.

Soederberg, L., Cassady, D., Applegate, E., Beckett, L., Wilson, M., Gibson, T., & Ellwood, K. (2015). Relationships among food label use, motivation, and dietary quality. *Nutrients*, *7*(2), 1068–1080.

Steinberger, J., Daniels, S. R., Hagberg, N., Isasi, C. R., Kelly, A. S., Lloyd-Jones, D., ... Urbina, E. (2016). Cardiovascular health promotion in children: Challenges and opportunities for 2020 and beyond: A scientific statement from the American Heart Association. *Circulation*, *134*(12), e236–e255.

Turkish Society of Cardiology (2016). Salt report. Retrieved from https://www.tkd.org.tr/HTBulteni/PDF/BULTEN-3-5.PDF.

Vos, M. B., Kaar, J. L., Welsh, J. A., Van Horn, L. V., Feig, D. I., Anderson, C. A., … & Johnson, R. K. (2017). Added sugars and cardiovascular disease risk in children: A scientific statement from the American Heart Association. Circulation, 135(19), e1017-e1034.

World Health Organization (2012). Guideline: Sodium intake for adults and children. Retrieved from https://www.who.int/nutrition/publications/guidelines/sodium_intake_printversion.pdf.

World Health Organization (2015). Guideline: Sugars intake for adults and children. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/149782/9789241549028_eng.pdf;jsessionid=84CAB0178004D1D686C4EB7BD9DD9C91?sequence=1.

Xi, B., Huang, Y., Reilly, K. H., Li, S., Zheng, R., Barrio-Lopez, M. T., ... Zhou, D. (2015). Sugar-sweetened beverages and risk of hypertension and CVD: A dose–response meta-analysis. *British Journal of Nutrition*, *113*(5), 709–717.

Yang, Q., Zhang, Z., Kuklina, E. V., Fang, J., Ayala, C., Hong, Y., ... Cogswell, M. E. (2012). Sodium intake and blood pressure among US children and adolescents. *Pediatrics*, *130*(4), 611–619.

Zahid, A., Davey, C., & Reicks, M. (2017). Beverage intake among children: Associations with parent and home-related factors. *International Journal of Environmental Research and Public Health*, *14*(8), 929.